CLAIMS

1. An oxide dispersion strengthened martensitic steel excellent in high-temperature strength which comprises, as expressed by % by weight, 0.05 to 0.25% C, 8.0 to 12.0% Cr, 0.1 to 4.0% W, 0.1 to 1.0% Ti, 0.1 to 0.5% Y_2O_3 with the balance being Fe and unavoidable impurities and in which Y_2O_3 particles are dispersed in the steel, characterized in that the oxide particles are finely dispersed and highly densified by adjusting the Ti content within the range of 0.1 to 1.0 % so that an excess oxygen content Ex.O in the steel satisfies[0.22 × Ti (% by weight) < Ex.O (% by weight) < 0.46 × Ti (% by weight)], the excess oxygen content Ex.O being a value obtained by subtracting an oxygen content in Y_2O_3 from an oxygen content in the steel.

2. A method of manufacturing an oxide dispersion strengthened martensitic steel excellent in high-temperature strength, said method comprising subjecting either element powders or alloy powders and a Y_2O_3 powder to mechanical alloying treatment in an Ar atmosphere to manufacture an oxide dispersion strengthened martensitic steel which comprises, as expressed by % by weight, 0.05 to 0.25% C, 8.0 to 12.0% Cr, 0.1 to 4.0% W, 0.1 to 1.0% Ti, 0.1 to 0.5% Y_2O_3 with the balance being Fe and unavoidable impurities and in which Y_2O_3 particles are dispersed in the steel, characterized in that an Ar gas having a purity of not less than 99.9999 % is used as the Ar atmosphere so that an excess oxygen content Ex.O

in the steel satisfies [0.22 × Ti (% by weight) < Ex.O (% by weight) < 0.46 × Ti (% by weight)], the excess oxygen content Ex.O being a value obtained by subtracting an oxygen content in Y_2O_3 from an oxygen content in the steel.

3. A method of manufacturing an oxide dispersion strengthened martensitic steel excellent in high-temperature strength, said method comprising subjecting either element powders or alloy powders and a Y_2O_3 powder to mechanical alloying treatment in an Ar atmosphere to manufacture an oxide dispersion strengthened martensitic steel which comprises, as expressed by % by weight, 0.05 to 0.25% C, 8.0 to 12.0% Cr, 0.1 to 4.0% W, 0.1 to 1.0% Ti, 0.1 to 0.5% Y_2O_3 with the balance being Fe and unavoidable impurities and in which Y_2O_3 particles are dispersed in the steel, characterized in that a stirring energy during the mechanical alloying treatment decreases to suppress oxygen contamination during stirring so that an excess oxygen content Ex.O in the steel satisfies [0.22 × Ti (% by weight) < Ex.O (% by weight) < 0.46 × Ti (% by weight)], the excess oxygen content Ex.O being a value obtained by subtracting an oxygen content in Y_2O_3 from an oxygen content in the steel.

4. A method of manufacturing an oxide dispersion strengthened martensitic steel excellent in high-temperature strength, said method comprising subjecting either element powders or alloy powders and a Y_2O_3 powder to mechanical alloying treatment in an Ar atmosphere to manufacture an oxide

dispersion strengthened martensitic steel which comprises, as expressed by % by weight, 0.05 to 0.25% C, 8.0 to 12.0% Cr, 0.1 to 4.0% W, 0.1 to 1.0% Ti, 0.1 to 0.5% Y_2O_3 with the balance being Fe and unavoidable impurities and in which Y_2O_3 particles are dispersed in the steel, characterized in that a metal Y powder or a Fe_2Y powder is used in place of the Y_2O_3 powder so that an excess oxygen content Ex.O in the steel satisfies [0.22 × Ti (% by weight) < Ex.O (% by weight) < 0.46 × Ti (% by weight)], the excess oxygen content Ex.O being a value obtained by subtracting an oxygen content in Y_2O_3 from an oxygen content in the steel.